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| 10/040,376 | 01/09/2002 | Ramon A. Gomez | 1875.0610000 | 4147 |

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EXAMINER

GLENN, KIMBERLY E

ART UNIT

PAPER NUMBER

2817

DATE MAILED: 12/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/040,376

Applicant(s)

GOMEZ ET AL.

Examiner

Kimberly E Glenn

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 15-17 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 15-17 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shen US Patent 6,522,217 in view of Hidaka et al US Patent 6,486,754.

The primary reference, Shen teaches in figure 2, a tunable HTS band-reject filter. The HTS band reject filter comprises a substrate 21a, a circuit pattern 21b deposited on the front surface of the substrate 21a. A blank HTS film 21c is deposited on the back surface of substrate 21a serving as the ground plane of the filter 21. A conductive film 21d (preferably a metal such as gold or silver) is deposited on the surface of blank HTS film 21c.

The HTS circuit pattern 21b comprises four HTS spiral resonators, 29a, 29b, 29c, 29d, an HTS main transmission line 30 (bypass line), and inter-resonator coupling transmission lines, 31, 31a, 31b, to form a 4-pole HTS band-reject filter. The main transmission line 30 has an input coupling 30a connected to input connector 23a, an output coupling 30b connected to output connector 23b, and is in the zigzag form at the locations between the resonators. The purpose of such zigzag is for adjusting the phase to obtain maximum in-band rejection.

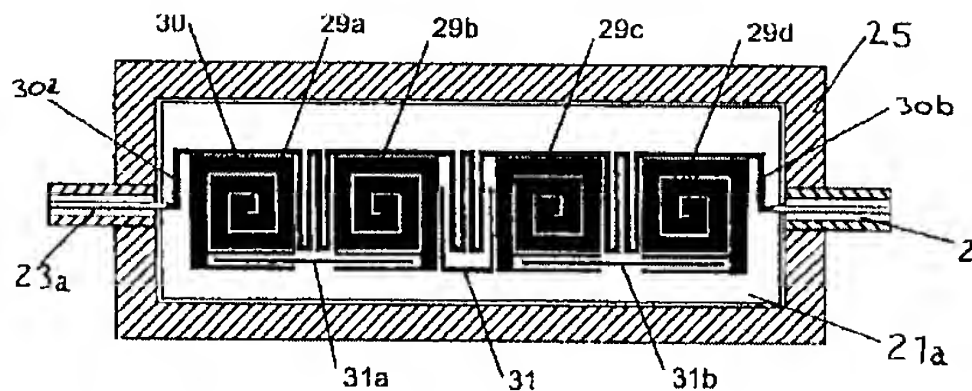


Fig. 2c

Thus, Shen is shown to teach all the limitations of the claim with the exception of the spiral resonators being connected to ground and the resonator being quarter wavelength transmission lines and bypass line having a substantially constant trace width.

Hidaka et al teaches a resonator shown in FIGS. 33A to 33C, having a central electrode 8 disposed in the center of a multi-spiral pattern, and the inner peripheral end of each line is grounded to a ground electrode 3 via a through-hole. This arrangement permits the resonant lines to operate as a $\frac{1}{4}$ wavelength resonator. In this way, as in the case described above, stabilization of the resonant mode can be achieved by providing the central electrode 8.

One of ordinary skill in the art would have found it obvious to replace the spiral resonators of Shen with the grounded resonators of Hidaka et al. The motivation for this modification would have been to provide the filter with $\frac{1}{4}$ wavelength resonators and to provide stabilization of the resonant mode.

One of ordinary skill in the art would have found it obvious for the bypass line to have a constant trace width, since such a modification would have involve a mere change in the width of a component. A change in size (or width) is generally recognized as being within the level of

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ordinary skill in the art. The motivation for modification would have been ease of manufacturing.

Claims 4- 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shen US Patent 6,522,217 in view of Hidaka et al US Patent 6,486,754 in view of Mostov US Patent 6, 448,873 (of record).

The primary reference, Shen teaches in figure 2, a tunable HTS band-reject filter. The HTS band reject filter comprises a substrate 21a, a circuit pattern 21b deposited on the front surface of the substrate 21a. A blank HTS film 21c is deposited on the back surface of substrate 21a serving as the ground plane of the filter 21. A conductive film 21d (preferably a metal such as gold or silver) is deposited on the surface of blank HTS film 21c.

The HTS circuit pattern 21b comprises four HTS spiral resonators, 29a, 29b, 29c, 29d, an HTS main transmission line 30 (bypass line), and inter-resonator coupling transmission lines, 31, 31a, 31b, to form a 4-pole HTS band-reject filter. The main transmission line 30 has an input coupling 30a connected to input connector 23a, an output coupling 30b connected to output connector 23b, and is in the zigzag form (bypass coupler) at the locations between the resonators. The purpose of such zigzag is for adjusting the phase to obtain maximum in-band rejection

Hidaka et al teaches a resonator shown in FIGS. 33A to 33C, having a central electrode 8 disposed in the center of a multi-spiral pattern, and the inner peripheral end of each line is grounded to a ground electrode 3 via a through-hole. This arrangement permits the resonant lines to operate as a $\frac{1}{4}$ wavelength resonator. In this way, as in the case described above, stabilization of the resonant mode can be achieved by providing the central electrode 8. Inherently the input and output impedance are a desired value.

Thus, Shen and Hidaka et al are shown to teach all the limitation of the claim with the exception of the a input capacitor coupled between the input and the first spiral resonator and an output capacitor coupled between the output and the second spiral resonator and the input and output capacitor being printed finger capacitors.

Mostov teaches a suspended printed interdigital capacitor constructed. The suspended interdigital capacitor (20) is a microstrip interdigital capacitor that is formed by printing an electrical conductive trace on an insulating material such as a printed circuit board (PCB). The interdigital capacitor 20 comprises two electrically conductive sets of digits or fingers 22, 24 formed on one layer of a substrate material 23. Mostov also teaches in figure 10, a filter wherein interdigital capacitors (126 and 142) are connected between input and output terminals (144 and 146) and spiral inductors (resonators)(124 140 128).

One of ordinary skill in the art would have found it obvious to provide the filter of Shen with the interdigital capacitors of Mostov. The motivation for this modification would have been to provide a high Q filter.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shen US Patent 6,522,217 in view of Hidaka et al US Patent 6,486,754 in view of Mostov US Patent 6, 448,873 (of record) in view of Shen US Patent 6,108,569 (of record).

The primary reference, Shen teaches in figure 2, a tunable HTS band-reject filter. The HTS band reject filter comprises a substrate 21a, a circuit pattern 21b deposited on the front surface of the substrate 21a. A blank HTS film 21c is deposited on the back surface of substrate 21a serving as the ground plane of the filter 21. A conductive film 21d (preferably a metal such as gold or silver) is deposited on the surface of blank HTS film 21c.

The HTS circuit pattern 21b comprises four HTS spiral resonators, 29a, 29b, 29c, 29d, an HTS main transmission line 30 (bypass line), and inter-resonator coupling transmission lines, 31, 31a, 31b, to form a 4-pole HTS band-reject filter. The main transmission line 30 has an input coupling 30a connected to input connector 23a, an output coupling 30b connected to output connector 23b, and is in the zigzag form (bypass coupler) at the locations between the resonators. The purpose of such zigzag is for adjusting the phase to obtain maximum in-band rejection

Thus Shen is shown to teach all the limitations of the claim with the exceptions of the spiral resonators being connected to ground and the resonator being quarter wavelength transmission lines, the a input capacitor coupled between the input and the first spiral resonator and an output capacitor coupled between the output and the second spiral resonator, the input and output capacitor being printed finger capacitors and the filter comprising a second plurality of resonators and a second bypass line and bypass line having a substantially constant trace width .

Hidaka et al teaches a resonator shown in FIGS. 33A to 33C, having a central electrode 8 disposed in the center of a multi-spiral pattern, and the inner peripheral end of each line is grounded to a ground electrode 3 via a through-hole. This arrangement permits the resonant lines to operate as a $\frac{1}{4}$ wavelength resonator. In this way, as in the case described above, stabilization of the resonant mode can be achieved by providing the central electrode 8.

One of ordinary skill in the art would have found it obvious to replace the spiral resonators of Shen with the grounded resonators of Hidaka et al. The motivation for this modification would have been to provide the filter with $\frac{1}{4}$ wavelength resonators and to provide stabilization of the resonant mode.

Mostov teaches a suspended printed interdigital capacitor constructed. The suspended interdigital capacitor (20) is a microstrip interdigital capacitor that is formed by printing an electrical conductive trace on an insulating material such as a printed circuit board (PCB). The interdigital capacitor 20 comprises two electrically conductive sets of digits or fingers 22, 24 formed on one layer of a substrate material 23. Mostov also teaches in figure 10, a filter wherein interdigital capacitors (126 and 142) are connected between input and output terminals (144 and 146) and spiral inductors (resonators)(124 140 128).

One of ordinary skill in the art would have found it obvious to provide the filter of Shen with the interdigital capacitors of Mostov. The motivation for this modification would have been to provide a high Q filter.

Shen '569 teaches in figure 8, 2-channels, each channel having a HTS mini-filter 83, 83a, respectively, with eight rectangular self-resonant spiral resonators. The input coupling circuits of mini-filters 83 and 83a are in the parallel lines form, which comprise input lines 84 and 84a and the gaps 84b, 84c, respectively, between input lines 84 and 84a and the first spiral resonator of filters 83 and 83a, respectively. The output coupling circuits of filters 83 and 83a are in the parallel lines form, which comprise the output lines 87a and 87b, and the gap 87c, 87d, respectively, between them and the last resonator of filters 83 or 83a. Output lines 87a and 87b also serve as the output lines for the two channels.

One of ordinary skill in the art would have modified the filter of Shen '217 to have the circuit configuration taught by Shen'569. The motivation for this modification would have been to use the filter of Shen'217 as a multiplexer.

One of ordinary skill in the art would have found it obvious for the bypass line to have a constant trace width, since such a modification would have involve a mere change in the width of a component. A change in size (or width) is generally recognized as being within the level of ordinary skill in the art. The motivation for modification would have been ease of manufacturing.

Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shen US Patent 6,522,217 in view of Hidaka et al US Patent 6,486,754 in view of Mostov US Patent 6, 448,873 (of record) in view of Domino et al US Patent 6,259,752(of record).

The primary reference, Shen teaches in figure 2, a tunable HTS band-reject filter. The HTS band reject filter comprises a substrate 21a, a circuit pattern 21b deposited on the front surface of the substrate 21a. A blank HTS film 21c is deposited on the back surface of substrate 21a serving as the ground plane of the filter 21. A conductive film 21d (preferably a metal such as gold or silver) is deposited on the surface of blank HTS film 21c.

The HTS circuit pattern 21b comprises four HTS spiral resonators, 29a, 29b, 29c, 29d, an HTS main transmission line 30 (bypass line), and inter-resonator coupling transmission lines, 31, 31a, 31b, to form a 4-pole HTS band-reject filter. The main transmission line 30 has an input coupling 30a connected to input connector 23a, an output coupling 30b connected to output connector 23b, and is in the zigzag form (bypass coupler) at the locations between the resonators. The purpose of such zigzag is for adjusting the phase to obtain maximum in-band rejection

Thus Shen is shown to teach all the limitations of the claim with the exceptions of the spiral resonators being connected to ground and the resonator being quarter wavelength transmission lines, the a input capacitor coupled between the input and the first spiral resonator

and an output capacitor coupled between the output and the second spiral resonator and the input and output capacitor being printed finger capacitors, bypass line having a substantially constant trace width and the filter comprising a second plurality of resonators and a second bypass line .

Hidaka et al teaches a resonator shown in FIGS. 33A to 33C, having a central electrode 8 disposed in the center of a multi-spiral pattern, and the inner peripheral end of each line is grounded to a ground electrode 3 via a through-hole. This arrangement permits the resonant lines to operate as a $\frac{1}{4}$ wavelength resonator. In this way, as in the case described above, stabilization of the resonant mode can be achieved by providing the central electrode 8.

One of ordinary skill in the art would have found it obvious to replace the spiral resonators of Shen with the grounded resonators of Hidaka et al. The motivation for this modification would have been to provide the filter with $\frac{1}{4}$ wavelength resonators and to provide stabilization of the resonant mode.

Mostov teaches a suspended printed interdigital capacitor constructed. The suspended interdigital capacitor (20) is a microstrip interdigital capacitor that is formed by printing an electrical conductive trace on an insulating material such as a printed circuit board (PCB). The interdigital capacitor 20 comprises two electrically conductive sets of digits or fingers 22, 24 formed on one layer of a substrate material 23. Mostov also teaches in figure 10, a filter wherein interdigital capacitors (126 and 142) are connected between input and output terminals (144 and 146) and spiral inductors (resonators)(124 140 128).

One of ordinary skill in the art would have found it obvious to provide the filter of Shen with the interdigital capacitors of Mostov. The motivation for this modification would have been to provide a high Q filter.

The modified device of Shen does not show using the filter in a double conversion tuner. However it is well known in the art to use a filter such as Shen in a double conversion tuner. Moreover, Shen states that their filters are used in the communication art.

Domino et al. (Fig. 1) discloses a conventional double conversion tuner having a differential filter 44.

It would have been obvious to one of ordinary skill in the art to use the modified filter of Shen'217 in a double conversion tuner since it is well known in the art to provide a filter in a double conversion tuner as shown by Domino et al it only requires a routine skill in the art.

One of ordinary skill in the art would have found it obvious for the bypass line to have a constant trace width, since such a modification would have involve a mere change in the width of a component. A change in size (or width) is generally recognized as being within the level of ordinary skill in the art. The motivation for modification would have been ease of manufacturing.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly E Glenn whose telephone number is (703) 306-5942. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (703) 308-4909. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

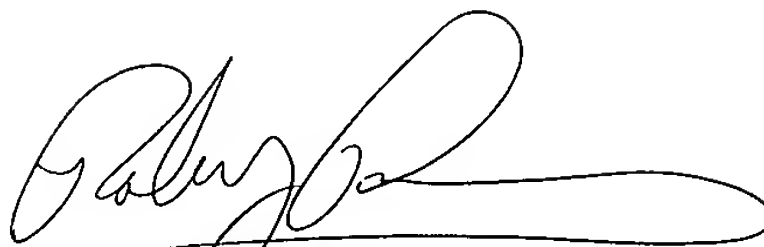
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Kimberly E Glenn
Examiner
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A handwritten signature in black ink, appearing to read 'Robert Pascal', with a long horizontal flourish extending to the right.

Robert Pascal
Supervisory Patent Examiner
Technology Center 2800